

## CLAIMS:

1. A method of extracting fat-soluble compounds from aqueous solutions including the steps:

500B<sub>4</sub> > providing an aqueous solution in which a fat-soluble compound is present;

providing a bed of crystalline metallic ore particles held in an appropriate vessel;

5 applying the aqueous solution to the bed of crystalline metallic ore particles substantially near the bottom of the bed at a rate sufficient to form and maintain a fluidised bed of crystalline metallic ore particles;

allowing the fat-soluble compound to attach to the crystalline metallic ore particles to form a crystalline-metallic-ore-fat-soluble-compound complex;

10 providing a wash solution;

contacting the wash solution with the crystalline-metallic-ore-fat-soluble-compound complex to desorb the fat-soluble compound from the complex;

collecting the wash solution containing the fat-soluble compound; and  
isolating the fat-soluble compound from the wash solution.

15 2. A method as claimed in claim 1 wherein the crystalline metallic ore particles are magnetite particles.

Sub A<sub>1</sub> > 3. A method as claimed in any one of claims 1 or 2 wherein the fat-soluble compounds attach to the metallic iron ore particles via means of adsorption or absorption.)

4. A method as claimed in any one of claims 1 to 3 wherein the wash solution is contacted with  
20 the crystalline-metallic-ore-fat-soluble-compound complex by applying the wash solution to the fluidised bed of crystalline metallic ore particles substantially near the bottom of the fluidised bed and at a rate sufficient to maintain the bed in a fluidised state and the resultant wash solution containing the fat-soluble compound is collected from near the top of, or above, the fluidised bed of crystalline metallic ore particles.

25 5. A method as claimed in any one of claims 1 to 3 further including the step of collecting the crystalline-metallic-ore-fat-soluble-compound complex prior to providing a wash solution

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and contacting the wash solution with the crystalline-metallic-ore-fat-soluble-compound complex.

6. A method as claimed in claim 5 wherein the crystalline-metallic-ore-fat-soluble-compound complex is collected from a region substantially near the top of the fluidised bed of crystalline metallic ore particles by means of continuous decantation.

7. A method as claimed in any one of claims 5 to 6 wherein the crystalline-metallic-ore-fat-soluble-compound complex is dried and stored for a period prior to being contacted with the wash solution.

8. A method as claimed in claim any one of claims 1 to 7 wherein the fat-soluble compound is present in the aqueous solution within a number of cells and the aqueous solution is a culture media.

9. A method as claimed in claim 8 wherein the cells are those of *Dunaliella salina*.

10. A method as claimed in any one of claims 1 to 9 wherein the fat-soluble compound is a natural pigment.

11. A method as claimed in claim 9 wherein the pigment is a carotenoid.

12. A method as claimed in claim 11 wherein the carotenoid is beta-carotene.

13. A substantially pure fat-soluble compound obtained using the method of any one of claims 1 to 12.

14. A crystalline-metallic-ore-fat-soluble-compound complex obtained using the method of claim 7.

Sub A2

FOOTNOTES

Sub A3

Sub A4

Add B6